

REMARKS

The art rejections are in error. Considering first the rejection of claims 1 and 3-5 under 35 U.S.C. 103(a) as being unpatentable over Ren et al. (US 2003/0157395 A1) in view of Roberts (US 3,556,161), independent claim 1 requires, in part, "a gas discharge unit provided with a filter... wherein said filter is constituted of a vapor-liquid separation membrane substrate and a carbon dioxide permselective membrane provided on the substrate". Neither, Ren et al. nor Roberts teaches this, and no combination of Ren et al. and Roberts would achieve or suggest this.

The Examiner concedes that Ren does not teach a filter having two layers, a vapor-liquid separation membrane substrate and a carbon dioxide permselective membrane provided on the substrate and refers to Roberts to provide the missing teaching, stating: "Roberts teaches a membrane consisting of a porous layer of polytetrafluoroethylene [PTFE] and a nonporous layer of PTFE. . . ." The Examiner contends that "The nonporous layer of PTFE would inherently be permselective to carbon dioxide as evidenced by Pinnau et al. (US 2004/0050250 A1)."

The Examiner misinterprets the art. In fact, Pinnau states at Paragraph 0174:

"...homopolymers made from these materials, such as polytetrafluoroethylene (PTFE) and the like, are very resistant to plasticization. However, they tend to be crystalline or semi-crystalline and to have gas permeabilities too low for any useful separation application. As constituents of copolymers with the fluorinated ring structures defined above, however, they can produce materials that combine amorphous structure, good permeability and good resistance to plasticization." (underlining added for emphasis)

Thus, Pinnau actually teaches that membranes formed of the homopolymer PTFE (such as that taught by Roberts) have gas permeabilities that are "too low for any useful separation application". Since the art applied by the Examiner actually teaches that non-porous PTFE is

not useful in separation applications, it would not be obvious to one skilled in the art that substituting the composite laminate of Roberts for the membrane of Ren would provide a filter having two layers, a vapor-liquid separation membrane substrate and a carbon dioxide perselective membrane provided on the substrate as required by Applicants' claim 1.

Furthermore, there is no motivation to combine the cited art. As the Supreme Court recently stated:

A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known. KSR International Co. v. Teleflex Inc. et al, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007)

And, as the MPEP 2143.01(III) elaborates:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. KSR 82 USPQ2d at 1396 ("If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.")

The Examiner states that "it would be advantageous to use the membrane of Roberts because the structure has increased tensile strength." (Page 3). However, this per se would not prompt one of ordinary skill in the art to combine the Ren and Roberts references. One of ordinary skill in the art would not substitute a material for its increased tensile strength and expect to have superior gas filtration and consequent fuel efficiency. Accordingly, no combination of Ren and Roberts teaches or suggests a gas discharge unit provided with a filter constituted of a

vapor-liquid separation membrane substrate and a carbon dioxide permselective membrane provided on the substrate as required by claim 1 or any of claims 3-5 that depend on claim 1. The rejection under 35 U.S.C. § 103 is therefore inappropriate.

Turning next to the rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Ren et al. in view of Roberts and further in view of Okuyama et al. (JP 2003-223920 A), claim 6 depends directly on independent claim 1. The deficiencies of the combination of Ren et al. and Roberts with respect to claim 1 have been discussed above. Okuyama et al. does not overcome these deficiencies. Okuyama et al. also does not teach a gas discharge unit provided with a filter, wherein said filter is constituted of a vapor-liquid separation membrane substrate and a carbon dioxide permselective membrane provided on the substrate. Even assuming arguendo that the Examiner correctly characterizes the teachings of Okuyama et al., no combination of Ren et al., Roberts, and Okuyama et al. can achieve or render obvious independent claim 1 or claim 6 that depends thereon.

Having dealt with all the objections and rejections raised by the Examiner, the Application is believed to be in order for allowance. Early and favorable action is respectfully requested.

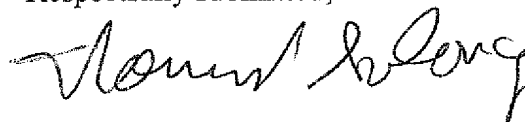
The foregoing Amendment makes no claim changes. Thus it should be entered as a matter of right.

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